

REMARKS

Reconsideration of the present application is respectfully requested. Claims 1 has been amended. Claims 1-30 and 33-39 are currently pending.

Claims 1, 2, 3, 5, and 9-12 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,717,494 to Kikuchi et al. ("Kikuchi"). Independent claim 1 as amended is directed to a ground-plane for an antenna device of the type used in a handheld electronic device, the ground-plane comprising: at least two conducting surfaces; at least one conducting strip connecting the conducting surfaces for allowing current to flow between the conducting surfaces; and the strip being narrower than the width of any of the conducting surfaces, wherein the ground-plane contributes to the radiation performance of the antenna device. Support for the amendments to independent claim 1 can be found at at least page 4, lines 22-29; page 6, line 27 to page 7, line 15; page 14, lines 3-7 of the specification as originally filed.

The Office Action asserts that Kikuchi teaches "in Figure 14 a ground-plane for an antenna device characterized in that the ground-plane includes at least two conducting surfaces, the two conducting surfaces being connected by at least one conducting strip which allows current to flow from one conducting surface to another, the strip being narrower than the width of any of the two conducting surface (figure 14 and col. 13, lines 30-40)." Applicant respectfully submits that Kikuchi fails teach or suggest a ground plane for an antenna device as claimed. Figure 14 and column 13, lines 30-40 of Kikuchi describes a printed circuit board 48 having a ground pattern 51 composed of an H shaped pattern formed on a back surface 50B of an insulating layer 49, and a frame-shaped electric conductor 52 provided on a face surface 50A of the insulating layer 49. Kikuchi further describes that the ground pattern 51 and the frame-shaped additional electric conductor 52 are electrically connected through a via plug 53 formed on the insulating layer 49. Applicant respectfully submits that there is no teaching or suggestion in Kikuchi that the ground pattern 51 is a ground plane for an antenna device. In fact, the printed-circuit board of Kikuchi is constructed so as to reduce the occurrence of electromagnetic interference (EMI) by suppressing radiated emissions of electrical conductors on the printed-circuit board. There is no teaching or suggestion that the ground pattern 51 of Kikuchi is suitable for use in an antenna device in which radiation of electromagnetic energy is desirable. For at least the foregoing reason, Applicant respectfully submits that independent

claim 1 as amended distinguishes over Kikuchi and requests that the 35 U.S.C. 102(e) rejection of independent claim 1 be withdrawn.

Claims 2, 3, 5, and 9-12 are dependent upon and include the features of independent claim 1. As discussed with respect to independent claim 1, Kikuchi fails to teach or suggest the aforementioned distinguishing features of independent claim 1. For at least the reasons as discussed with respect to independent claim 1, Applicant respectfully submits that claims 2, 3, 5, and 9-12 also distinguish over Kikuchi and requests that the 35 U.S.C. 102(e) rejections of claims 2, 3, 5, and 9-12 be withdrawn.

Claims 1-39 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,140,975 to Cohen ("Cohen"). As previously discussed, independent claim 1 as amended is directed to a ground-plane for an antenna device of the type used in a handheld electronic device, the ground-plane comprising: at least two conducting surfaces; at least one conducting strip connecting the conducting surfaces for allowing current to flow between the conducting surfaces; and the strip being narrower than the width of any of the conducting surfaces, wherein the ground-plane contributes to the radiation performance of the antenna device. Cohen describes a vertical antenna system which includes vertically space-apart fractal conductive and passive elements, and one or more fractal ground elements. However, Applicant respectfully submits that Cohen fails to teach or suggest a ground plane comprising: at least two conducting surfaces; at least one conducting strip connecting the conducting surfaces for allowing current to flow between the conducting surfaces; and the strip being narrower than the width of any of the conducting surfaces, wherein the ground-plane contributes to the radiation performance of the antenna device as claimed in independent claim 1.

For example, Figure 7D-5 of Cohen describes an antenna system having dendrite fractal radials 215 coupled to a ground shield of a cable 50. Applicant respectfully submits that there is no teaching or suggestion that the dendrite fractal radials are a ground plane comprising at least two conducting surfaces, at least one conducting strip connecting the conducting surfaces for allowing current to flow between the conducting surfaces, and the strip being narrower than the width of any of the conducting surfaces, wherein the ground-plane contributes to the radiation performance of the antenna device as claimed in independent claim 1. Figure 8B of

Cohen describes a transceiver 500 equipped with a plurality of fractal antennas 510A, 510B, 510C, and 510D coupled to respective cables 50A, 50B, 50C, and 50D to electronics 600.

Applicant respectfully submits that Cohen contains no teaching or suggestion that the plurality of fractal antennas 510A, 510B, 510C, and 510D include ground planes comprised of at least two conducting surfaces, at least one conducting strip connecting the conducting surfaces for allowing current to flow between the conducting surfaces, and the strip being narrower than the width of any of the conducting surfaces, wherein the ground-plane contributes to the radiation performance of the antenna device as found in independent claim 1.

As another example, Figure 11B of Cohen describes a fractal antenna 810 which lies in the same plane as a ground plane 800, but is separated therefrom by an insulating region in which a passive or parasitic element 800' is disposed within. The ground plane 800 of Cohen is described as being formed of a conductive sheet, and is not described as being comprised of at least two conducting surfaces, at least one conducting strip connecting the conducting surfaces for allowing current to flow between the conducting surfaces, and the strip being narrower than the width of any of the conducting surfaces, wherein the ground-plane contributes to the radiation performance of the antenna device as found in independent claim 1.

Figure 12A and 12B of Cohen describes an antenna system having a first fractal antenna 810 connected to a center conductor of a coaxial cable 50, and a second fractal antenna 810' connected to a ground. Applicant respectfully submits that there is no teaching or suggestion that the second fractal antenna 810' is a ground plane having the aforementioned features as claimed in independent claim 1. Figures 14A-14C describe antenna systems having a driven fractal antenna 810, a non-driven fractal antenna 810', and a ground plane 800. However, the ground plane 800 of Cohen does not include the aforementioned features of independent claim 1. Figure 14C of Cohen further describes a second ground plane element 800'. However, the second ground plane element 800' also does not include the aforementioned distinguishing features of independent claim 1. For at least the foregoing reasons, Applicant respectfully submits that independent claim 1 as amended distinguishes over Cohen and requests that the 35 U.S.C. 102(b) rejection of independent claim 1 be withdrawn.

Further regarding dependent claims 14-20, Applicant respectfully submits that Cohen fails to teach or suggest the further features of "wherein at least one of the conducting surfaces or at least one of the conducting strips of said ground-plane is shaped as a space filling curve (SFC), said SFC including at least ten connected straight segments, wherein said segments are smaller than a tenth of the operating free-space wave length and are spatially arranged in such a way that no two adjacent and connected segments form another longer straight segment." Although Cohen describes antenna systems having fractal ground elements, Applicant respectfully submits that there appears to be no teaching or suggestion that these fractal ground elements are shaped as space filling curves.

Claims 2-30, and 33-39 are dependent upon and include the features of independent claim 1. As discussed with respect to independent claim 1, Cohen fails to teach or suggest the aforementioned distinguishing features of independent claim 1. For at least the reasons as discussed with respect to independent claim 1, Applicant respectfully submits that claims 2-30, and 33-39 also distinguish over Cohen and requests that the 35 U.S.C. 102(b) rejections of claims 2-30, and 33-39 be withdrawn.

In view of the foregoing, Applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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